

MOWING TRIAL D. (EXPERIMENT No. 16/2/75); AND MOWING TRIAL F. (EXPERIMENT No. 16/2/89).

A large amount of analytical work has been carried out on samples from these trials, which deal with the effect of applications of sulphate of ammonia on the herbage. The most noticeable effect of sulphate-of-ammonia applications on the mown herbage has been the reduction in the percentage of lime as compared with herbage from the control plots. The duration of this effect is being investigated, and has been found to last for some considerable time after the effect on the yield has disappeared. For example, herbage from treatment 6, which received 2 cwt. of sulphate of ammonia per acre early in April, 1930, still showed a reduction in the lime content in February, 1931. This depression in the lime content is the more interesting, since all the plots received liberal applications of lime just prior to the commencement of the experiment. Also, in the case of trial F, one treatment (treatment 3) received additional amounts of lime at the time of the applications of the sulphate of ammonia (4 cwt. carbonate of lime plus 2 cwt. sulphate of ammonia). The lime content of the herbage from this treatment was almost exactly the same as that of the herbage from treatment 2, receiving applications of 2 cwt. of sulphate of ammonia only. In order to investigate the cause of this lime depression separations of the clover and grass from control and sulphate of ammonia plots were made. Unfortunately, owing to the great amount of work involved in the separations, it was only possible to separate enough to do lime determinations, though it would have been very interesting to study the effect of the nitrogen treatment on the other minerals. As a result of this work, it was found that the depressing influence of the nitrogen treatments on the lime content was due almost entirely to the change in the botanical composition of the sward (*i.e.*, due to a lowering of the percentage of clover). The lime contents of the individual species (white clover and perennial rye-grass) were only slightly depressed by the nitrogen treatments. This aspect is the subject of a paper to be published shortly.

The effect of the nitrogen applications on the other minerals or on the protein content is not very marked. A small increase in the protein content usually follows the nitrogen application, but this effect does not last long, and is often followed by an actual lowering of the protein content. This effect is due to increased growth of grass in comparison with clover. The potash content of the herbage varies considerably—varying inversely with the lime content.

ANALYSES OF STRAINS (ON BEHALF OF AGROSTOLOGIST).

Perennial Rye-grass.—Nineteen samples of perennial rye-grass, representing five distinct types, were analysed. The differences in chemical composition were small, and the variations within the type were almost as great as the differences between the various types—the only exception being in the case of type 5 (bad false-perennial type). This type produces herbage which appears to be superior in lime, phosphate, ether extract, and protein. However, the number of samples of each type analysed was not sufficient to justify any definite conclusions being drawn.

Red Clover.—Analyses of samples of nine types of red clover were made. The analyses showed considerable variations and indicate that definite strain variations exist. For example, the lime content of the complete plants varied from 1·5 per cent. to 3·2 per cent., while the variation in the lime content of the leaves alone was 2 per cent. to 4·3 per cent. The number of samples analysed does not justify any further conclusions.

SEED-TESTING SECTION.

N. R. Fox, Seed Analyst.

For the calendar year ending December, 1930, 10,461 seed samples were received at the seed-testing station, representing an increase of 1,308 on the number received during the previous year, this increase being almost wholly accounted for by commercial samples.

The distribution of the samples received was as follows:—

Senders, &c.	Number of Samples.	
	1930.	1929.
Seed-merchants	8,856	7,827
Farmers and growers	190	138
Government Departments (other than Agriculture)	130	67
Massey College	247	..
Agriculture Department—		
Fields Division	141	99
Plant Research Station	642	879
Retests	255	143
Totals	10,461	9,153

The samples shown for Government Departments and Fields Division represent mainly check samples on departmental seed purchases, while those for the Plant Research Station consist of special seed station tests, together with samples from the Mycological Laboratory, Agrostologist, Agronomist, &c., in connection with their various investigational activities.

Tests were required on the samples received as shown in the following:—

	Number.		Per Cent. Increase.
	1930.	1929.	
Samples for purity and germination	3,889	3,101	25
Samples for purity only	133	89	49
Samples for germination only	6,439	5,953	8
Totals	10,461	9,153	14
Purity tests made	4,022	3,190	26
Germination tests made	10,328	9,054	14
Total tests	14,350	12,244	17

Included in the total number of samples are over one thousand tested according to the International rules, this representing more than a reasonably workable maximum under the present conditions of the laboratory.